

REMARKS

Status of the claims:

With the above amendments, claims 1 and 5 have been amended and claim 4 has been cancelled. Support for the amendment to claim 1 comes from original claim 4. Claim 5 has been amended to change the dependency from claim 4 to claim 1. Reconsideration is respectfully requested in light of the following remarks.

Rejections under 35 USC §112, second paragraph

Claims 1, 2, 4, 12, and 13 have been rejected under 35 USC §112, second paragraph as being indefinite. The Examiner asserts that these claims are rejected because they recite only functional language in the claims, and do not specifically set forth the composition. Claim 1 has been amended by incorporating the structural language of claim 4 into claim 1. It is believed that with this amendment that the rejection has been obviated. Withdrawal of the rejection is respectfully requested.

Rejections under 35 USC §§102/103

Claims 1, 2, and 13 are rejected under 35 USC §102(b) as being anticipated by, or in the alternative, under 35 USC

§103(a) as being unpatentable over Blyth '940 (US Patent No. 4,592,940).

Claims 1, 2, and 13 are rejected under 35 USC §102(e) as being anticipated by, or in the alternative, under 35 USC §103(a) as being unpatentable over Pacifici '328 (US Patent No. 5,843,328). It is believed that the Pacifici Patent Number is as indicated above and not US Patent No. 5,843,428 as stated by the Examiner.

Claims 1, 2, 4 and 13 are rejected under 35 USC §103(a) as being unpatentable over JP '175 (JP 59-150175 A) or Kato '003 (US Patent No. 5,349,003) in view of Pacifici '328.

Claim 5 is rejected under 35 USC §103(a) as being unpatentable over JP '175 in view of Pacifici '328 and further in view of Kubo '175 (US Patent No. 5,883,175).

Claims 1, 2, 4, 10, and 13 are rejected under 35 USC §103(a) as being unpatentable over Amimoto '991 (US Patent No. 5,143,991) in view of Kato '003, and Pacifici '328.

Claim 12 is rejected under 35 USC §103(a) as being unpatentable over Blyth '940 in view of Pacifici '328.

These rejections are traversed for the following reasons:

Present Invention

The present invention discloses a carpet comprising a stainproof-treated textile, wherein the carpet has a stainproof

ratio (%) of at least 30 %. The stainproof ratio is expressed by the following formula:

$$\text{Stainproof ratio (\%)} = 100 \times (\Delta E_N - \Delta E_{Tn}) / \Delta E_N$$

wherein ΔE_N is the color difference after a stainproof test of untreated carpet, ΔE_{Tn} is the color difference after a stainproof test of carpet treated by the stainproof agent, and n is a number of cleaning wherein cleaning is conducted according to AATCC-138. The carpet in the instant invention is treated with a stainproofing agent composition for carpet comprising a fluorine-containing stainproofing agent comprising a fluoroalkyl-containing compound and a triazine ring-containing crosslinking agent.

Generally, stainproofing properties come from fluorine. Accordingly, the less fluorine there is in a composition, the lower would be the stainproofing properties. However, in the instant invention, one sees an increase in the durability of the stainproofing agent composition with lower fluorine levels.

Disclosure of Blyth '940

Blyth '940 discloses nylon carpets that are rendered resistant to the staining that is normally caused by artificial colorants such as Food, Drug and Cosmetic Red Dye No. 40. Stainproofing occurs by immersing the carpets in a boiling

aqueous solution of a selected phenol-formaldehyde condensation product at a pH of 4.5 or less. Blyth '940 further discloses a particularly useful condensation product that is obtained by the condensation of formaldehyde with a mixture of diphenolsulfone and phenolsulfonic acid.

Disclosure of JP '175

JP '175 discloses a urea or urethane compound with at least two ethylene imine groups that are essential. The fiber made in JP '175 includes yarns, woven, knitted and non-woven fabrics, which are used for ski pants, a windbreaker, golf wear, etc. JP '175 does not disclose that the fiber of JP '175 is applicable to a carpet.

Further, JP '175 discloses in lines 8-10 of the upper column of page 3 that triazine ring-containing compounds have an effect of improving a stitch staggering-resistance. It further says that this stitch is required as a product characteristic.

Disclosure of Kato '003

Kato '033 discloses an aqueous fluorine-containing polymer dispersion having particle diameters of 0.05-3 μm . These fluorine-containing polymer dispersions are obtainable by emulsion-polymerizing 5-95 parts by weight of a monomer mixture. The monomer mixture consists of at least one monomer selected

from the group consisting of alkyl acrylates whose alkyl groups have 1-18 carbon atoms and alkyl methacrylates whose alkyl groups have 1-18 carbon atoms and optionally an ethylenically unsaturated compound copolymerizable with the alkyl acrylates and the alkyl methacrylates. These compounds are present in an aqueous medium in the presence of 100 parts by weight of particles of a vinylidene fluoride polymer and an aqueous dispersion containing a fluorine-containing polymer which is present in an amount that is 95-30 parts by weight (in terms of solids content) of said aqueous fluorine-containing polymer dispersion and 5-70 parts by weight (in terms of solids content) of an aqueous dispersion of a water-soluble resin and/or a water-dispersible resin. These aqueous dispersions can be used as a coating composition for fiber-treating compounds, a paper-processing compound, or a floor-coating compound.

Disclosure of Pacifici '328

Pacifici '328 discloses a protective finishing composition as well as methods of manufacturing such compositions for finishing carpet products. The composition in Pacifici '328 has a stainblocker and fluorocarbon-based repellent which can be made in a one-step process. This process includes first adding a naphthalene sulfonated salt to either a stainblocker or a fluorocarbon-based repellent and then adding the combination to

the chemical not originally mixed with the naphthalene sulfonated salt.

Disclosure of Kubo '175

Kubo '175 discloses a stainproofing composition having water and oil-repellency, containing a polymer emulsion prepared by dissolving at least one polyfluoroalkyl group-containing compound selected from the group consisting of a polyfluoroalkyl group-containing (meth)acrylate polymer, a polyfluoroalkyl group-containing polyester, a polyfluoroalkyl group-containing maleate and a polyfluoroalkyl group-containing fumarate in at least one monomer selected from the group consisting of a (meth)acrylate ester, a vinyl ester, a styrene compound and vinylidene chloride, vinyl chloride. Then, the resultant solution is emulsified in water to prepare an oil-in-water emulsion, then polymerized. The resulting emulsion exhibits water- and oil-repellency and stainproof properties.

Disclosure of Amimoto '991

Amimoto '991 discloses a copolymer comprising (a) an acrylate or methacrylate having a fluoroalkyl group, (b) a polyalkylene glycol acrylate or methacrylate, (c) an acrylate or methacrylate having a hydroxyl group, and (d) at least one compound selected from the group consisting of alkyl acrylates,

alkyl methacrylates and butadiene. The resulting copolymer imparts water and oil repellency and soil-releasability to fabrics.

Removal of Blyth '940 and Pacifici '328

The structural elements of claim 4 have been inserted into claim 1. It is believed that because claim 4 was not rejected over either Blyth '940 or Pacifici '328 that the rejection over these references has been obviated. Withdrawal of the rejections is respectfully requested.

Removal of JP '175 or Kato '003 in view of Pacifici '328

Regarding JP '175, the Examiner acknowledges that excellent seam shift resistance is a result of the present invention whether it is needed or not. But if the present invention were conducted by combining JP '175 and Pacifici '328, a triazine ring-containing compound would not be present in the stainproofing composition as in the present invention. This is because a carpet does not need excellent seam shift resistance, whereas ski pants, windbreakers, and golf wear do.

Moreover, a urea or urethane compound with at least two ethylene imine groups would not have been omitted in the stainproofing composition in the present invention. It is

because carpet also needs a water strikethrough preventive effect as ski pants, a windbreaker and golf wear do.

In contrast, it is preferable not to include a urea or urethane compound with at least two ethylene imine groups in the present invention. This is because adding a urea or urethane compound would reduce the fluorine ratio in a stainproofing agent composition, which in turn reduces the stainproofing properties. This generally is not preferable for a stainproofing carpet that demands an elevated level of stainproofing in comparison to the lower levels required in ski pants, windbreakers, and golf wear.

It is more important for ski pants, a windbreaker and golf wear to have water repellency and oil repellency than stainproofing properties (page 3, lines 9-11 of the English translation of JP '175).

Accordingly, Applicants assert that it would not have been easy to conduct the present invention by combining JP '175 and Pacifici '328.

Kato '003 discloses an aqueous dispersion comprising a fluorine-containing polymer, which dispersion consists essentially of 95-30 parts by weight of the following dispersion (A) and 5-70 parts by weight of an aqueous dispersion of at least one resin selected from the group consisting of a water-soluble resin and a water-dispersible resin the dispersion

(A) is an aqueous fluorine-containing polymer dispersion obtained by emulsion-polymerizing 5-95 parts by weight of a monomer mixture consisting of at least one monomer selected from the group consisting of alkyl acrylates and alkyl methacrylates and optionally an ethylenically unsaturated compound copolymerizable with the alkyl acrylates and the alkyl methacrylates, in an aqueous medium in the presence of 100 parts by weight of particles of a vinylidene fluoride polymer (column 2, line 57-column 3, line 8).

Although triazine compounds are exemplified as the water-soluble resin above, it should be noted that the aqueous fluorine-containing polymer dispersion (A) comprises a monomer mixture consisting of at least one monomer selected from the group consisting of alkyl acrylates and alkyl methacrylates as well as a fluorine-containing compound.

Moreover, Kato '003's aqueous fluorine-containing polymer dispersion has excellent storage stability and excellent film formability and can form a film superior in adhesion to substrate, chemical resistance, and mechanical strengths (column 2, lines 6-49). Kato '003 does not disclose stainproofing properties.

Kato '003 fails to teach that the monomer mixture is not essential, or that a dispersion without the monomer mixture works well as a stainproofing agent, which can retain the

stainproofing properties after cleaning repeatedly. Thus, even if a prima facie case of obviousness were made, Applicants have demonstrated that the instant invention shows unexpectedly superior properties that could not be gleaned from the disclosure of Kato '003.

Accordingly, Applicants submit that neither Kato '003 in view of Pacifici '328 nor JP '175 in view of Pacifici '328 can render obvious the instant invention. Withdrawal of the rejection is warranted and respectfully requested.

Removal of JP '175 in view of Pacifici '328 and further in view of Kubo '175

Because JP '175 in view of Pacifici '328 can not render obvious the instant claim 4 (now incorporated into claim 1) as discussed directly above, Applicants assert that claim 5 (which depends on claim 1) can not be rendered obvious by the addition of the Kubo '175 reference. Kubo '175 fails to make up the deficiencies of JP '175 and Pacifici '328. Withdrawal of the rejection is respectfully requested.

Removal of Amimoto '991 in view of Kato '003 and Pacifici '328

The copolymer of Amimoto '991 comprises (a) an acrylate or methacrylate ester having a fluoroalkyl group, (b) a polyalkylene glycol acrylate or methacrylate, (c) an acrylate or

methacrylate ester having a hydroxyl group, and (d) at least one compound selected from the group consisting of an alkyl acrylate, an alkyl methacrylate and butadiene.

Amimoto '991 teaches that when the ratio of (b) is less than 10% by weight, the copolymer has poor dispersibility in water so that it has insufficient durability, that when the ratio of (c) is less than 10% by weight, the copolymer has insufficient soil-releasability and durability, and that when the ratio of (d) is less than 5% by weight, the copolymer has poor durability (column 3, lines 33-46).

These traits are also shown in Table 4 and Table 6, and in the comparative experiments in the instant application. For example, Table 6 shows that a copolymer lacking any one of (c), (b) and (d) has poor water-repellency, oil-repellency and soil-releasability after washing 5 times.

Accordingly, one of ordinary skill in the art would surmise that (b), (c) and (d) are essential in applying the copolymer of Amimoto '991 to a stainproofing agent for a carpet which should retain stainproofing properties after repeatedly cleaning.

Even if one were to consider using the triazine compound disclosed by Kato '003 and an application to a carpet as disclosed by Pacifici '328, one of ordinary skill in the art would not think that any of (b), (c) and (d) in Amimoto '991 could be omitted.

Applicants believe that the present invention shows unexpectedly superior properties in that even without (b), (c), and (d) in Amimoto '991, a carpet according to the present invention can retain the stainproofing properties after repeated cleanings.

For the above reasons, Applicants submit that the rejection has been obviated. Withdrawal of the rejection is respectfully requested.

With the above remarks and amendments, it is believed that the claims, as they now stand, define patentable subject matter such that a passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.

If any questions remain regarding the above matters, please contact Applicant's representative, Andrew D. Meikle, in the Washington metropolitan area at the phone number listed below.

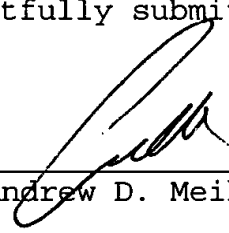
Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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